PB-230 854

WATER QUALITY DATA OHIO RIVER WHEELING, WEST VIRGINIA, STEUBENVILLE, OHIO AREA. APPENDIX

Environmental Protection Agency
Wheeling, West Virginia

1970

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APPENDIX
WATER QUALITY DATA
OHIO RIVER

Wheeling, W.Va. — Steubenville, Ohio Area

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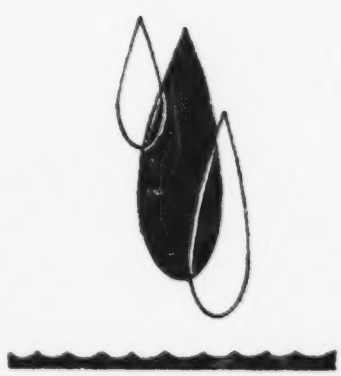
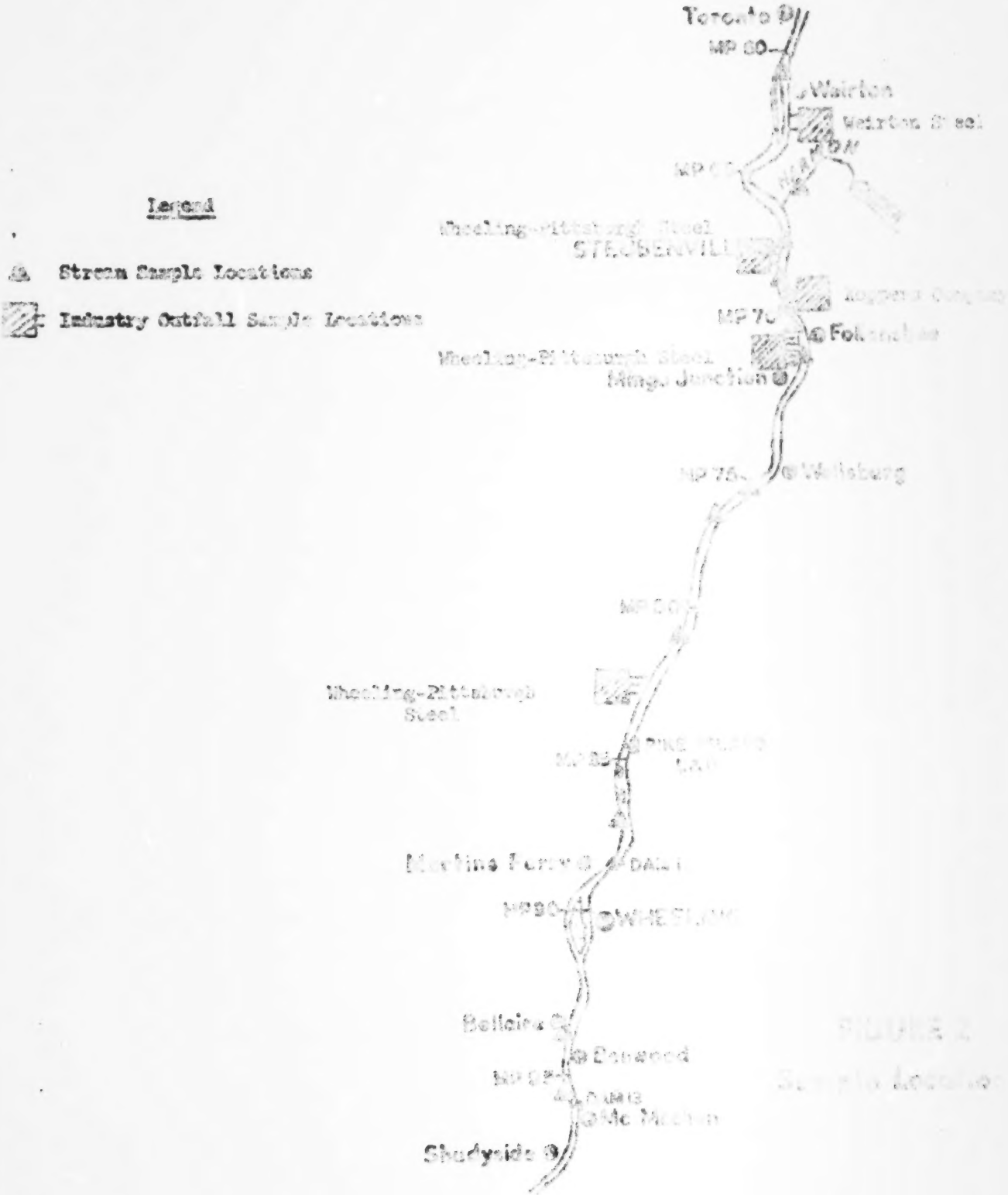


This Appendix contains the water quality data collected by the Wheeling Office of Water Programs, Environmental Protection Agency, during a special study conducted in July and August 1970, on the Ohio River from Toronto, Ohio (mile point 60.0) to McMechen, West Virginia (mile point 96.1).

FIGURE 1
OHIO RIVER
Wheeling Area


Legend
Stream Sample Locations
Industry Outfall Sample Locations
Toronto
MP 80
Weirton
Wheeling-Pittsburgh Steel
STEUBENVILLE
MP 70
Follansbee
Wheeling-Pittsburgh Steel
Mingo Junction
MP 75
Wellsburg
Wheeling-Pittsburgh Steel
PIKE ISLAND
Martins Ferry
DAM 11
MP 90
DAM 12
Bellaire
Powhatan
MP 85
DAM 13
Shadyside

SAMPLING STATIONS
SPECIAL STUDY-EPA-OHIO RIVER
July-August, 1970

Description	Mile Point
Ohio River downstream of Toronto, Ohio	60.8
Ohio River opposite Steubenville, Ohio, water intake	65.3
Harmon Creek at W. Va. Route 2 bridge	-
Ohio River upstream of Steubenville, Ohio, sewage treatment plant	67.1
Ohio River downstream of Steubenville, Ohio, sewage treatment plant	67.9
Ohio River downstream of Wheeling-Pittsburgh Steel and Koppers Company	70.0
Ohio River downstream of Follansbee, West Virginia	72.0
Ohio River downstream of Wellsburg, W. Va.	75.0
Ohio River downstream of Brilliant, Ohio sewage treatment plant	75.6
Ohio River upstream of Wheeling-Pittsburgh Steel, Yorkville, Ohio	82.7
Ohio River at Wheeling, West Virginia, raw water intake 1/	86.7
Ohio River opposite Bellaire, Ohio, water intake	94.0
Ohio River upstream of Lock and Dam No. 13	95.5

1/ EPA Pollution Surveillance Station.

Stream Water Quality Data

Station Number 550386 - Ohio River Below Toronto, Ohio, M. P. 60.8

Date	Temp. °C	D. O. mg/l	pH	Cond. umhos	T. Coliform Org./100 ml	F. Coliform Org./100 ml	F. Streptococcus Org./100 ml	BOD_5 mg/l	Phenols mg/l	Cyanide mg/l	Iron mg/l	Mn mg/l	Acidity mg/l	Chromium mg/l	Arsenic mg/l	Fluoride mg/l
7-27-70	26	7.2	6.2	290	3,600	130	6	1.5	0.000	0.000	0.2	0.4	5	0		
7-28-70	26.5	7.5	6.4	300	2,600	100	4	2.0	0.000		0.3	0.4	4	0	Composite for Week of 7/27	Composite for Week of 7/27
7-29-70	27	7.7	6.4	285	6,400	150	<2	1.4	0.000	0.000	0.4	0.4	5	0		
7-30-70	27	7.7	7.1	360	4,100	LA	12	1.9	0.000	0.000	0.5	0.4	4	0		
7-31-70	27	7.8	6.9	310	5,000	660	2	1.5	0.004	0.000	0.4	0.4	3	0	0.000	0.30
8-3-70	26	7.6	7.2	380	5,200	350	26	2.0	0.000	0.000	0.6	0.7	13	0		
8-4-70	26.5	8.5	7.0	360	6,600	280	4	2.3	0.001	0.000	0.6	1.7	6	0	Composite for Week of 8/3	Composite for Week of 8/3
8-5-70	26	8.0	7.3	370	6,100	180	2	2.3	0.000	0.000	0.4	0.5	4	0		
8-6-70	26.5	7.8	6.9	375	5,300	230	4	2.1	0.003	0.000	0.4	0.6	4	0		
8-7-70	26.5	7.9	7.2	360	3,600	190	12	1.7	0.005	0.000	0.5	0.6	3	0	0.000	0.33

Lead mg/l	
0.020	Composite for Week of 7/27
0.016	Composite for Week of 8/3

Stream Water Quality Data

Station Number 550550 - Ohio River @ Steubenville, Ohio, M. P. 65.3

Date	Temp. °C	D. O. mg/l	pH	Cond. umhos	T. Coliform Org./100 ml	F. Coliform Org./100 ml	F. Streptococcus Org./100 ml	BOD_5 mg/l	Phenols mg/l	Cyanide mg/l	Iron mg/l	Mn mg/l	Acidity mg/l	Chromium mg/l	Arsenic mg l	Fluoride mg/l
7-27-70	26.5	7.7	6.3	305	4,100	340	24	1.7	0.000	0.020	0.2	0.4	5	0	Composite for Week of 7/27	Composite for Week of 7/27
7-28-70	27	7.3	6.3	300	5,800	160	18	2.1	0.003	0.020	0.3	0.4	10	0		
7-29-70	27.5	7.6	6.8	300	4,900	270	10	0.7	0.008	0.020	0.3	0.4	5	0		
7-30-70	27	7.4	7.0	330	5,900	LA	150	2.0	0.008	0.020	0.3	0.4	2	0		
7-31-70	27	7.0	6.9	320	5,800	350	12	1.4	0.009	0.040	0.2	0.3	4	0	0.008	0.40
8-3-70	26	7.3	7.1	385	4,500	420	46	1.4	0.003		0.5	0.5	8	0	Composite for Week of 8/3	Composite for Week of 8/3
8-4-70	26.5	7.5	7.0	385	6,300	400	14	1.5	0.013	0.030	0.4	0.6	5	0		
8-5-70	26	7.6	7.2	400	5,500	330	2	2.1	0.009	0.040	0.4	0.5	5	0		
8-6-70	27	6.9	7.2	380	4,600	190	22	0.9	0.003	0.020	0.3	0.6	4	0		
8-7-70	26.5	7.7	7.3	385	4,000	170	62	1.0	0.003	0.020	0.7	0.7	4	0	0.000	0.35

Lead mg/l	
0.010	Composite for Week of 7/27
0.022	Composite for Week of 8/3

Stream Water Quality Data

Station Number 550174 - Harmon Creek @ Route 2 Bridge

Date	Temp. °C	D. O. mg/l	pH	Cond. umhos	T. Coliform Org./100 ml	F. Coliform Org./100 ml	F. Streptococcus Org./100 ml	BOD_5 mg/l	Phenols mg/l	Cyanide mg/l	Iron mg/l	Mn mg/l	Acidity mg/l	Chromium mg/l	Arsenic mg/l	Fluoride mg/l
7-27-70	34.5	6.4	5.8	555	320,000	3,900	770	>5.5	0.000	0.020	25.0	1.0	42	0		
7-28-70	33	6.0	6.1	440	71,000	770	800	>7.4	0.001	0.020	18.0	1.2	28	0	Composite for Week of 7/27	Composite for Week of 7/27
7-29-70	36	6.3	5.8	535	40,000	2,300	2,100	>6.4	0.008	0.010	16.0	1.4	39	0		
7-30-70	32	7.5	5.6	600	24,000	170	2,000	>5.0	0.004	0.010	24.0	1.4	62	0		
7-31-70	34	6.0	6.3	620	26,000	1,800	1,900	>6.0*	0.004	0.010	18.0	1.3	50	0	0.004	0.60
8-3-70	31	6.5	6.1	640	420,000	76,000	1,600	16.7	0.003	0.020	36.0	1.5	90	0		
8-4-70	34	6.3	6.2	600	33,000	1,400	620	14.4	0.005	0.020	20.0	1.2	46	0	Composite for Week of 8/3	Composite for Week of 8/3
8-5-70	33	7.3	3.9	750	5,500	660	180	11.8	0.004	0.010	50.0	1.3	128	0		
8-6-70	36	6.0	6.4	690	66,000	12,000	6,300	21.0	0.012	0.000	28.0	1.5	51	0		
8-7-70	33.5	7.5	5.0	600	3,100	200	970	3.2	0.007	0.010	25.0	1.0	61	0	0.004	0.74

* 3 day BOD

Lead mg/l	
0.900	Composite for Week of 7/27
1.100	Composite for Week of 8/3

Stream Water Quality Data

Station Number 550209 - Ohio River Above Steubenville, Ohio, M. P. 67.1

Date	Temperature °C	Dissolved Oxygen mg/l	pH	Conductivity umhos	Total Coliform Org./100 ml	Fecal Coliform Org./100 ml	Fecal Streptococcus Org./100 ml	BOD_5 mg/l
7-27-70	27	7.2	6.4	335	37,000	5,300	150	1.9
7-28-70	28	7.4	6.3	360	42,000	1,800	60	2.7
7-29-70	28.2	7.3	6.5	330	14,000	760	32	1.4
7-30-70	27.5	7.4	6.9	320	21,000	1,100	480	1.2
7-31-70	27	7.4	6.8	350	6,500	210	16	1.8
8-3-70	26	6.8	7.0	400	5,400	260	18	2.9
8-4-70	26	7.5	6.9	410	4,800	370	10	3.0
8-5-70	26.5	8.0	6.7	420	3,600	260	4	>4.8
8-6-70	28	7.4	7.2	490	3,700	150	6	2.6
8-7-70	26.5	8.2	7.0	415	9,100	240	10	1.6

Stream Water Quality Data

Station Number 550376 - Ohio River Below Steubenville, Ohio, M. P. 67.9

Date	Temp. °C	D. O. mg/l	pH	Cond. umhos	T. Coliform Org./100 ml	F. Coliform Org./100 ml	F. Streptococcus Org./100 ml	BOD_5 mg/l	Phenols mg/l	Cyanide mg/l	Iron mg/l	Mn mg/l	Acidity mg/l	Chromium mg/l	Arsenic mg/l	Fluoride mg/l
7-27-70	26	8.4	6.1	340	39,000	2,700	200	2.3	0.000	0.020	0.7	0.4	4	0		
7-28-70	27	7.6	6.2	340	30,000	2,800	70	2.2	0.000	0.010	0.7	0.4		0	Composite for Week of 7/27	Composite for Week of 7/27
7-29-70	26.5	7.7	6.2	315	20,000	2,000	56	1.6	0.001	0.010	0.5	0.3		0		
7-30-70	26	7.2	6.5	370	48,000	3,700	860	1.0	0.000	0.010	0.5	0.4		0		
7-31-70	26.8	7.6	6.6	420	6,900	290	76	1.1	0.004	0.020	0.7	0.4		0	0.000	0.40
8-3-70	27	7.0	6.4	440	27,000	1,900	570	2.0	0.001	0.000	1.4	0.5		0		
8-4-70	27	7.6	6.4	440	8,000	1,400	120	2.2	0.003	0.010	0.6	0.7		0	Composite for Week of 8/3	Composite for Week of 8/3
8-5-70	27	7.9	6.5	440	6,600	750	130	1.8	0.000	0.020	0.8	0.6		0		
8-6-70	26	8.9	6.2	450	6,500	240	12	1.4	0.001	0.030	0.6	0.6		0		
8-7-70	27	9.0	6.5	460	5,500	330	10	0.7	0.001	0.020	0.5	0.6		0	0.000	0.37

Lead mg/l	
0.010	Composite for Week of 7/27
0.020	Composite for Week of 8/3

Stream Water Quality Data

Station Number 550388 - Ohio River Below W-P & Koppers Company, M. P. 70.0

Date	Temp. °C	D. O. mg/l	pH	Cond. umhos	T. Coliform Org./100 ml	F. Coliform Org./100 ml	F. Streptococcus Org./100 ml	BOD_5 mg/l	Phenols mg/l	Cyanide mg/l	Iron mg/l	Mn mg/l	Acidity mg/l	Chromium mg/l	Arsenic mg/l	Fluoride mg/l
7-27-70	26.5	7.6	6.2	360	22,000	1,600	120		0.004	0.010	0.8	0.4	5	0		
7-28-70	27.2	7.8	6.3	340	24,000	1,500	20	3.3	0.030	0.030	0.6	0.4	5	0	Composite for Week of 7/27	Composite for Week of 7/27
7-29-70	27	8.0	6.2	320	17,000	1,400	78	1.2	0.053	0.000	0.5	0.4	4	0		
7-30-70	26	7.0	6.4	320	16,000	1,200	390	0.3	0.004	0.030	0.5	0.4	15	0		
7-31-70	26.5	8.2	6.6	400	6,400	320	58	3.0	0.051	0.020	0.5	0.4	7	0	0.000	0.40
8-3-70	27	7.1	6.3	430	5,100	320	16	1.5	0.021	0.020	0.7	0.5	4	0		
8-4-70	27.5	7.2	6.2	450	7,000	290	16	1.8	0.023	0.020	0.6	0.7	3	0	Composite for Week of 8/3	Composite for Week of 8/3
8-5-70	27	8.2	6.6	445	14,000	520	8	1.7	0.014	0.020	0.5	0.5	4	0		
8-6-70	26	8.8	6.2	450	24,000	2,000	32	0.7	0.012	0.040	0.6	0.5	4	0		
8-7-70	26	8.9	6.2	460	18,000	700	22	1.1	0.017	0.010	0.6	0.7	6	0	0.000	0.35

Lead mg/l	
0.025	Composite for Week of 7/27
0.004	Composite for Week of 8/3

Stream Water Quality Data

Station Number 550389 - Ohio River Below Follansbee, West Virginia, M. P. 72.0

Date	Temp. °C	D. O. mg/l	pH	Cond. umhos	T. Coliform Org./100 ml	F. Coliform Org./100 ml	F. Streptococcus Org./100 ml	BOD_5 mg/l	Phenols mg/l	Cyanide mg/l	Iron mg/l	Mn mg/l	Acidity mg/l	Chromium mg/l	Arsenic mg/l	Fluoride mg/l
7-27-70	27	7.5	6.2	360	19,000	1,100	10	1.9	0.000	0.010	0.8	0.4	3	0		
7-28-70	26.8	7.5	6.2	350	31,000	1,200	210	1.5	0.000		0.7	0.4	5	0	Composite for Week of 7/27	Composite for Week of 7/27
7-29-70	27.8	7.7	6.2	325	14,000	490	28	0.9	0.001	0.000	0.6	0.4	4	0		
7-30-70	27	7.2	6.3	325	16,000	1,200	590	1.1	0.001	0.010	0.7	0.4	3	0		
7-31-70	27	8.2	6.6	380	12,000	450	86	2.0	0.001	0.020	0.5	0.4	4	0	0.000	0.40
8-3-70	27.5	7.1	6.2	425	5,700	180	20	2.3	0.001	0.020	0.6	0.6	6	0		
8-4-70	27.2	7.0	6.2	450	7,100	440	16	2.5	0.005	0.020	0.5	0.6	5	0	Composite for Week of 8/3	Composite for Week of 8/3
8-5-70	27	8.2	6.4	440	12,000	460	26	2.2	0.000	0.020	0.5	0.6	4	0		
8-6-70	26.5	8.4	6.2	450	8,900	600	30	2.5	0.001	0.040	0.8	0.6	4	0		
8-7-70	26	8.4	6.2	470	54,000	60	22	2.0	0.004	0.030	0.4	0.6	4	0	0.000	0.37

Lead mg/l	
0.016	Composite for Week of 7/27
0.004	Composite for Week of 8/3

Stream Water Quality Data

Station Number 550390 - Ohio River Below Wellsburg, West Virginia & Brilliant, Ohio, M. P. 75.0 (Week of July 27, 1970)
Station Number 550555 - Ohio River Below Wellsburg, West Virginia & Brilliant, Ohio, M. P. 75.0 (Week of August 3, 1970)

Date	Temperature °C	Dissolved Oxygen mg/l	pH	Conductivity umhos	Total Coliform Org./100 ml	Fecal Coliform Org./100 ml	Fecal Streptococcus Org./100 ml	BOD_5 mg/l
7-27-70	26	7.5	6.2	380	11,000	650	<10	1.7
7-28-70	26	7.5	6.2	360	30,000	660	40	0.9
7-29-70	27.2	8.4	6.4	350	33,000	1,200	1,000	1.4
7-30-70	27	7.0	6.2	325	14,000	900	270	0.9
7-31-70	27	7.8	6.6	400	27,000	800	300	0.9
8-3-70	27	7.7	6.5	420	5,700	390	26	1.9
8-4-70	27.2	6.7	6.2	440	11,000	650	22	1.2
8-5-70	28	8.2	6.4	445	7,300	420	12	1.8
8-6-70	26	8.4	6.2	450	8,000	460	34	1.0
8-7-70	26	8.4	6.2	440	15,000	570	48	0.8

Stream Water Quality Data

Station Number 550391 - Ohio River Above W-P Steel, M. P. 82.7

Date	Temp. °C	D. O. mg/l	pH	Cond. umhos	T. Coliform Org./100 ml	F. Coliform Org./100 ml	F. Streptococcus Org./100 ml	BOD mg/l	Phenols mg/l	Cyanide mg/l	Iron mg/l	Mn mg/l	Acidity mg/l	Chromium mg/l	Arsenic mg/l	Fluoride mg/l
7-27-70	28	8.3	6.2	400	7,400	180	6	2.5	0.000	0.000	0.5	0.6	5	0		
7-28-70	27	7.2	6.2	380	2,900	62	8	1.5	0.000	0.000	0.4	0.4	5	0	Composite for Week of 7/27	Composite for Week of 7/27
7-29-70	28	7.5	6.2	360	3,400	170	2	1.6	0.000	0.000	0.4	0.4	4	0		
7-30-70	28	7.1	6.2	325	3,900	250	24	1.6	0.000	0.000	0.6	0.4	4	0		
7-31-70	27.8	7.4	6.6	360	6,100	230	18	1.8	0.000	0.000	0.3	0.4	5	0	0.000	0.40
8-3-70	27.5	7.1	6.7	390	4,400	210	32	1.5	0.001	0.000	0.5	0.5	10	0		
8-4-70	28	6.8	6.4	430	3,800	360	18	2.3	0.003	0.010	0.6	0.7	3	0		
8-5-70	29	8.0	6.4	440	3,000	98	2	1.3	0.000	0.000	0.5	0.5	9	0	Composite for Week of 8/3	Composite for Week of 8/3
8-6-70	27	9.8	6.2	460	4,500	180	10	1.5	0.001	0.000	0.5	0.5	3	0		
8-7-70	26	8.9	6.2	450	4,200	90	12	1.9	0.004	0.000	0.5	0.6	2	0	0.000	0.36

Lead mg/l	
0.008	Composite for Week of 7/27
0.004	Composite for Week of 8/3

Stream Water Quality Data

Station Number 550147 - Ohio River @ Wheeling, West Virginia, M. P. 86.7

Date	Temp. °C	D. O. mg/l	pH	Cond. umhos	T. Coliform Org./100 ml	F. Coliform Org./100 ml	F. Streptococcus Org./100 ml	BOD_5 mg/l	Phenols mg/l	Cyanide mg/l	Iron mg/l	Mn mg/l	Acidity mg/l	Chromium mg/l	Arsenic mg/l	Fluoride mg/l
7-27-70	25	8.4	6.3	420	17,000	130	82	2.4	0.000	0.000	0.3	0.7	6	0		
7-28-70	27	7.8	6.0	380	6,000	90	6	2.0	0.000	0.000	0.8	0.6	7	0	Composite for Week of 7/27	Composite for Week of 7/27
7-29-70	27	8.5	6.1	350	4,700	38	2	1.4	0.003	0.000	0.7	0.4	4	0		
7-30-70	27	8.0	6.3	350	5,300	130	24	3.6	0.001	0.000	0.8	0.4	5	0		
7-31-70	27	7.5	6.3	320	5,700	110	20	3.1	0.003	0.000	0.8	0.4	6	0	0.000	0.40
8-3-70	27	7.9	6.3	400	4,400	90	50	3.7	0.000	0.020	0.6	0.5	8	0		
8-4-70	26.5	8.5	6.1	380	5,000	230	18	4.0	0.001	0.000	1.0	0.6	4	0		
8-5-70	27	7.3	6.2	440	5,700	160	20	2.6	0.003	0.010	0.9	0.6	6	0	Composite for Week of 8/3	Composite for Week of 8/3
8-6-70	26	6.9	6.1	500	6,800	310	100	4.3	0.001	0.010	0.8	0.6	4	0		
8-7-70	26.5	6.6	6.5	420	3,100	50	18	1.8	0.003	0.010	0.6	0.5	5	0	0.000	0.36

Lead mg/l	
0.012	Composite for Week of 7/27
0.020	Composite for Week of 8/3

Stream Water Quality Data

Station Number 550551 - Ohio River @ Bellaire, Ohio, M. P. 94.0

Date	Temperature °C	Dissolved Oxygen mg/l	pH	Conductivity umhos	Total Coliform Org./100 ml	Fecal Coliform Org./100 ml	Fecal Streptococcus Org./100 ml	BOD_5 mg/l
7-27-70	27	8.0	6.2	410	39,000	1,400	170	2.7
7-28-70	27	7.8	6.1	400	100,000	4,800	60	2.2
7-29-70	27	7.5	6.0	365	54,000	1,600	170	1.1
7-30-70	27	7.5	6.4	420	21,000	1,300	320	4.0
7-31-70	27	7.1	6.2	340	130,000	23,000	160	2.3
8-3-70	27	7.8	6.3	410	5,900	570	46	2.4
8-4-70	26.5	8.3	6.3	440	21,000	1,000	46	2.5
8-5-70	26	7.6	6.4	460	3,900	1,400	40	1.9
8-6-70	27	7.9	6.5	480	30,000	1,100	46	2.0
8-7-70	26	7.8	6.5	480	140,000	6,700	160	2.4

Stream Water Quality Data

Station Number 550552 - Ohio River Above Lock No. 13, M. P. 95.5

Date	Temp. °C	D. O. mg/l	pH	Cond. umhos	T. Coliform Org./100 ml	F. Coliform Org./100 ml	F. Streptococcus Org./100 ml	BOD mg/l	Phenols mg/l	Cyanide mg/l	Iron mg/l	Mn mg/l	Acidity mg/l	Chromium mg/l	Arsenic mg/l	Fluoride mg/l
7-27-70	27	8.4	6.2	420	17,000	340	20	3.4	0.000	0.000	0.5	0.7	4	0		
7-28-70	27	8.1	6.1	400	13,000	4,400	40	2.4	0.000		0.6	0.5	5	0	Composite for Week of 7/27	Composite for Week of 7/27
7-29-70	27.5	7.5	5.9	380	21,000	390	14	2.0	0.001	0.000	0.7	0.5	5	0		
7-30-70	27	8.0	6.0	380	28,000	800	70	2.7	0.000	0.000	0.8	0.5	5	0		
7-31-70	27	7.5	6.2	340	70,000	>6,000	44	2.5	0.000	0.000	0.7	0.4	6	0	0.000	0.40
8-3-70	27	7.7	6.6	400	59,000	11,000	42	2.6	0.000	0.000	0.7	0.4	4	0		
8-4-70	27	8.5	6.3	420	5,900	370	8	2.7	0.003	0.000	0.7	0.5	4	0	Composite for Week of 8/3	Composite for Week of 8/3
8-5-70	26	8.0	6.2	460	10,000	530	40	1.9	0.000	0.000	0.5	0.5	6	0		
8-6-70	27	7.8	6.2	490	28,000	950	30	1.7	0.003	0.010	0.8	0.6	3	0		
8-7-70	26	8.2	6.5	480	16,000	1,000	50	1.8	0.001	0.010	0.6	0.5	4	0	0.000	0.37

Lead mg/l	
0.052	Composite for Week of 7/27
0.060	Composite for Week of 8/3

Industrial Outfall Data

W-1 - Weirton Steel, Outfall, Ohio River, M. P. 61.93

Sample Period	Temp. °C	pH	Phenols mg/l	Cyanide mg/l	Oils mg/l	Dissolved Solids	Sup. Solid	Total Solids	Hexavalent (Cr+6)	Fluoride mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8-10-70														
6 a.m.-2 p.m.	40 40 40	7.3 7.2 7.4	Composite for 8-10-70	1.71	22.6	317	16	333	0.00	0.9	1.8	0.6	0.0	0.122
2 a.m.-10 p.m.	40.5 40	7.9 5.7		1.45	8.8	323	18	341	0.08	0.9	1.5	0.6	0.0	0.108
10 p.m.-6 a.m.	39.5		0.234	1.37	16.4	307	18	325	0.05	0.8	1.5	0.6	0.0	0.088
8-11-70														
6 a.m.-2 p.m.	39 40	7.0	0.182	1.56	Composite for 8-11-70	283	19	302	1.10	0.8	1.6	0.5	0	0.080
2 p.m.-10 p.m.	34.5 34.5	7.0 7.2	0.241	1.44		281	17	298	0.04	0.7	1.8	0.5	0	0.065
10 p.m.-6 a.m.	36	6.6	0.319	1.14	55.8	290	30	320	0.04	0.9	1.5	0.5	0	0.075
8-12-70														
6 a.m.-2 p.m.	35 36.7 36	7.2 7.8 7.7	0.325	1.06	Composite for 8-12-70	No sample received in Lab.								
2 p.m.-10 p.m.	35 35	7.4 7.7	0.286	0.49		319	21	340	0.1	0.9	4.8	0.5	Composite	0.075
10 p.m.-6 a.m.	35	7.5	0.286	0.76	22.0	305	17	322	0.1	0.9	4.2	0.5	0.003	0.080

Industrial Outfall Data

W-3 - Weirton Steel, Outfall, Ohio River, M. P. 62.33

Sample Period	Temp. °C	pH	Phenols mg/l	Cyanide mg/l	Oils mg/l	Dissolved Solids	Sup. Solid	Total Solids	Hexavalent (Cr+6)	Fluoride mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8-10-70														
6 a.m.-2 p.m.	35 35.6	5.7 3.2	Composite for 8-10-70	0.04	27.2	355	56	411	1.7	2.6	5.0	0.6	0	0.070
2 p.m.-10 p.m.	36 35.6	3.4 6.9		0.08	28.6	440	47	487	2.3	6.4	4.3	0.6	0	0.064
10 p.m.-6 a.m.	37.5 37.5	6.0		0.08	27.2	421	48	469	5.0	4.8	6.0	0.6	0	0.052
8-11-70														
6 a.m.-2 p.m.	34.5	3.8	0.161	0.14	31.2	354	54	408	1.6	8.4	5.5	0.5	0	0.050
8-12-70														

Samples could not be taken because of barges on river in front of outfall.

Industrial Outfall Data

W-4 - Weirton Steel-Harmon Creek, Outfall, Ohio River, M. P. Cove Ave.

Sample Period	Temp. °C	pH	Phenols mg/l	Cyanide mg/l	Oils mg/l	Dissolved Solids	Sup. Solid	Total Solids	Hexavalent (Cr+6)	Fluoride mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8/10/70														
6 a.m.-2 p.m.	37 34.5 35	3.5 2.7 3.1	Composite 8-10-70	0.02	18.8	400	48	448	0	0.5	108.0	0.8	0	0.074
2 p.m.-10 p.m.	30.3	4.1		0.02	17.6	368	27	395	0	0.3	64.0	0.8	0	0.096
10 p.m.-6 a.m.	36 36	3.8	0.026	0.02	12.4	297	80	377	0	0.5	86.0	0.8	0	0.074
8/11/70														
6 a.m.-2 p.m.	38 36.5 37	3.1 3.3	Composite 8-11-70	Composite 8-11-70	Composite 8-11-70	258	68	326	0	0.4	64.0	0.7	0	0.125
2 p.m.-10 p.m.	35	3.5				292	61	353	0	0.4	58.0	0.7	0	0.140
10 p.m.-6 a.m.	36.5 36.5	3.0 3.1	0.007	0.01	43.6	363	104	467	0	0.4	76.0	0.7	0	0.115
8/12/70														
6 a.m.-2 p.m.			Composite 8-12-70	Composite 8-12-70	Composite 8-12-70	No sample received in Lab.					60.0	0.5	Composite	0.125
2 p.m.-10 p.m.						587	43	630	0	0.3	96.0	0.8		0.420
10 a.m.-6 a.m.			0.005	0.02	50.8	541	43	584	0	0.3	92.0	0.7	0.003	0.140

Industrial Outfall Data

K-1 - Koppers Company, Outfall, Ohio River, M.P. 69.45

Sample Period	Temp. °C	pH	Phenols mg/l	Cyanide mg/l	Oils mg/l	Dissolved Solids	Sup. Solid	Total Solids	Hexavalent (Cr+6)	Fluoride mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8-10-70														
6 a.m.-2 p.m.	36.7 33	9.8 10.0	98.80	1.63	21.4	641	57	698	0	0.4	3.0	0.3	0	0.055
2 p.m.-10 p.m.			83.20	1.10	24.8	3,526	49	3,575	0	0.5	6.2	0.2	0	0.075
10 p.m.-6 a.m.	Samples not taken because of boat being out of service													
8-11-70														
6 a.m.-2 p.m.	36 38	9.2 9.0	98.8	2.20	50.8	3,966	52	4,018	0.01	0.5	5.0	0.3	0	0.015
2 p.m.-10 p.m.	39 39	8.9 8.2	70.2	3.80	86.0	3,350	28	3,378	0	0.5	5.5	0.3	0	0.020
10 p.m.-6 a.m.	40 39.5	8.6 9.5	182.0	7.60	99.2	1,871	57	1,928	0	0.6	6.0	0.5	0	0.015
8-12-70														
6 a.m.-2 p.m.	69 35.7	8.2 7.8	15.60	0.85	79.2	418	38	456	0	0.4	22.6	1.0	Composite	0.025
2 p.m.-10 p.m.	41.5	9.9	663.00	3.46	120.6	5,460	76	5,536	0	0.8	20.0	0.2		0.010
10 p.m.-6 a.m.	39 41	10.1 9.5	390.00	12.45	96.0	4,967	63	5,030	0	0.7	16.0	0.1	0.002	0.010

Industrial Outfall Data

K-2 - Koppers Company, Outfall, Ohio River, M. P. 69.44

Sample Period	Temp. °C	pH	Phenols mg/l	Cyanide mg/l	Oils mg/l	Dissolved Solids	Sup. Solids	Total Solids	Hexavalent (Cr+6)	Fluoride mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8-10-70														
6 a.m.-	28	7.0												
2 p.m.	36.5	7.9	0.579	0.17	6.8	352	67	419	0	0.3	2.4	0.5	0	0.030
2 p.m.-														
10 p.m.			0.072	0.11	8.2	299	24	323	0	0.3	2.0	0.5	0	0.010
10 p.m.-6 a.m.			Samples not taken because of boat being out of service.											
8-11-70														
6 a.m.-	36	7.4												
2 p.m.	36	7.4	0.0325	0.02	Composite for 8-11-70	298	26	324	0	0.4	1.0	0.7	0	0.090
2 p.m.-	38	6.8												
10 p.m.	37	7.0	0.153	0.02		267	5	272	0	0.3	0.8	0.6	0	0.025
10 p.m.-	36	7.4												
6 a.m.	36	7.5	0.286	0.02	43.4	839	13	852	0	0.3	0.9	0.6	0	0.025
8-12-70														
6 a.m.-	36.7	7.1												
2 p.m.	38.3	7.2	0.007	Composite for 8-12-70	Composite for 8-12-70	297	11	308	0	0.4	2.1	0.5	0.003	0.020
2 p.m.-	38													
10 p.m.	38	7.8	0.754			289	17	306	0	0.4	2.6	0.6	0.002	0.015
10 p.m.-	36.5	7.4												
6 a.m.	37.7	7.3	0.182	0.03	36.6	608	18	626	0	0.3	2.8	0.6	—	0.010

Industrial Outfall Data

K-3 - Koppers Company, Outfall, Ohio River, M. P. 69.33

Sample Period	Temp. °C	pH	Phenols mg/l	Cyanide mg/l	Oils mg/l	Dissolved Solids	Sup. Solids	Total Solids	Hexavalent (Cr+6)	Fluoride mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8-10-70														
6 a.m.- 2 p.m	30 32	7.4 7.2	0.358	0.02	0.8	290	9	299	0	0.3	0.8	0.5	0	0.030
2 p.m.- 10 p.m.			0.371	0.02	0.8	264	9	273	0	0.3	0.7	0.5	0	0.030
10 p.m.- 6 a.m.					Samples not taken because of boat being out of service.									
8-11-70														
6 a.m.- 2 p.m.	30 36	7.3 7.4	0.514	Composite for 8-11-70	Composite for 8-11-70	273	24	297	0	0.4	1.0	0.6	0	0.025
2 p.m.- 10 p.m.	39 42	7.5 7.2	0.520			243	7	250	0	0.4	1.2	0.6	0	0.035
10 p.m.- 6 a.m.	42 41	8.2 9.2	0.650	0.01	10.4	250	22	272	0.01	0.4	0.9	0.4	0	0.025
8-12-70														
6 a.m.- 2 p. m.	43 53.2	10.4 10.3	11.050	Composite for 8-12-70	47.4	463	231	694	0.2	0.4	1.8	0.3	Composite	0.045
2 p.m.- 10 p.m.	55 53.3	3.4 9.8	27.625		33.0	1,417	37	1,454	0	0.4	5.6	0.6		0.045
10 p.m.- 6 a.m.	51.5 51.8	10.9 10.7	18.525	0.04	23.6	595	35	630	0.1	0.4	5.2	0.3	0	0.025

Industrial Outfall Data

K-4 - Koppers Company, Outfall, Ohio River, M. P. 69.20

Sample Period	Temp. °C	pH	Phenols mg/l	Cyanide mg/l	Oils mg/l	Dissolved Solids	Sup. Solids	Total Solids	Hexavalent (Cr+6) mg/l	Fluoride mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8-10-70														
	40	7.2												
6 a.m.-2 p.m.	42	7.2	3.250	0.02	0.0	294	40	334	0	0.4	1.0	0.5	0	0.020
2 p.m.-10 p.m.			5.363	0.02	7.2	302	8	310	0	0.3	1.1	0.5	0	0.065
10 p.m.-6 a.m.	Samples not taken because of boat being out of service.													
8-11-70														
	44	7.0		Composite for 8-11-70	Composite for 8-11-70									
6 a.m.-2 p.m.	47	7.2	1.313			283	23	306	0	0.4	1.6	0.6	0	0.030
2 p.m.-10 p.m.	34	6.7	1.365			292	17	309	0	0.4	1.4	0.6	0	0.045
	36	7.3												
10 p.m.-6 a.m.	34.5	7.2	1.073	0.02	16.6	275	11	286	0	0.4	1.6	0.6	0	0.035
8-12-70														
	40.7	7.7		Composite for 8-12-70	Composite for 8-12-70									0.015
6 a.m.-2 p.m.	45	7.7	6.500			212	12	224	0	0.4	2.4	0.5	Composite	
	48	7.6												
2 p.m.-10 p.m.	35.7	7.1	1.658			343	21	364	0	0.4	2.8	0.5		0.020
	36.7	7.3												
10 a.m.-6 a.m.	35.7	7.3	1.820	0.02	16.8	319	15	334	0	0.4	2.0	0.5	0.001	0.005

Industrial Outfall Data

WP-1 - Wheeling-Pittsburgh Steel, North Steubenville, Outfall, Ohio River, M. P. 66.61

Sample Period	Temp. °C	pH	Phenols mg/l	Cyanide mg/l	Oils mg/l	Dissolved Solids	Sup. Solid	Total Solids	Hexavalent (Cr+6)	Fluoride mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8-10-70														
	28	6.2												
6 a.m.-2 p.m.	28	6.9		0.000	41.8	492	2,060	2,552	0	0.3	80.0	1.3	0	0.195
	29	6.6	Composite 8-10-70											
2 p.m.-10 p.m.	30			0.000	2,368.8	812	8,002	8,814	0	0.6	340.0	2.5	0	1.320
10 p.m.-6 a.m.	31		0.059	0.000	2,242.8	469	174	643	0	0.6	300.0	1.8	0	0.090
8-11-70														
	29	5.5												
6 a.m.-2 p.m.	41				56.8	458	198	656	0	0.5	74.0	1.5	0	0.065
	29		Composite 8-11-70	Composite 8-11-70										
2 p.m.-10 p.m.	26	5.6			16.4	521	125	646	0	0.6	60.0	1.2	0	0.080
	24	5.2												
10 pm.-6 p.m.	26		0.005	0.010	1,654.6	648	282	930	0	0.6	89.0	2.0	0	0.175
8-12-70														
	25.6	6.5												
6 a.m.-2 p.m.	29	3.3			32.4								0	
	25.7	5.1	Composite 8-12-70	Composite 8-12-70										
2 p.m.-10 p.m.	26	5.4			14,205.2	740	1,086	1,826	0	0.5	230.0	1.8	Composite	0.510
	26	5.9												
10 p.m.-6 a.m.	26	3.7	0.035	0.040	6,006.8	936	278	1,214	0	0.6	200.0	1.8		0.160

Industrial Outfall Data

WP-2 - Wheeling-Pittsburgh Steel, North Steubenville, Outfall, Ohio River, M. P. 68.79

Sample Period	Temp. °C	pH	Phenols mg/l	Cyanide mg/l	Oils mg/l	Dissolved Solids	Sup. Solid	Total Solids	Hexavalent (Cr+6)	Fluoride mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8-10-70														
	28	6.9												
6 a.m.-2 p.m.	34.5	7.2	Composite 8-10-70	1.75	37.4	325	9	334	0	0.6	4.0	0.5	0	0.030
	32	7.0												
2 p.m.-10 p.m.	35	7.2		1.24	3.0	303	19	322	0	0.6	4.0	0.5	0	0.065
	36	6.8												
10 p.m.-6 a.m.	35		0.013	0.70	9.4	250	21	271	0	0.7	4.0	0.5	0	0.030
8-11-70														
	33	6.5												
6 a.m.-2 p.m.	34	6.8		0.91		297	23	320	0	0.5	6.0	0.7	0	0.039
	34.5		Composite 8-11-70		Composite 8-11-70									
2 p.m.-10 p.m.	30	6.5		1.71		305	10	315	0	0.5	2.2	0.6	0	0.035
	29.5	6.3												
10 p.m.-6 a.m.	30	5.9	0.008	1.71	10.8	298	22	320	0	0.9	4.6	0.6	0	0.035
8-12-70														
	29	6.2												
6 a.m.-2 p.m.	30	6.1		0.87		No sample received in Lab.					9.0	0.5	0	0.035
	30.7	6.2	Composite 8-12-70		Composite 8-12-70									
2 p.m.-10 p.m.	32	6.4		2.28		359	17	376	0	0.6	8.0	0.5	0	0.080
	32	6.7												
10 p.m.-6 a.m.	31	6.7	0.010	2.12	22.4	291	13	304	0	0.9	8.5	0.5	0	0.055

WP-4 - Wheeling-Pittsburgh Steel, Mingo Junction, Outfall, Ohio River, M. P. 70.73

Industrial Outfall Data

Sample Period	Temp. °C	pH	Phenols mg/l	Cyanide mg/l	Oils mg/l	Dissolved Solids	Sup Solid	Total Solids	Hexavalent (Cr+6)	Fluoride mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8-10-70														
6 a.m.- 2 p.m.	34	3.8	Composite 8/10/70	0.00	20.6	572	77	649	0	0.4	54.0	2.4	0	0.080
2 p.m.- 10 p.m.			0.010	0.01	23.4	964	148	1,112	0	0.3	18.0	4.3	0	0.045
10 p.m.- 6 a.m.	Samples not taken because of boat being out of service.													
8-11-70														
6 a.m.- 2 p.m.	33 34	3.7 3.7	Composite for 8/11/70	Composite for 8/11/70	Composite for 8/11/70	828	114	942	0	0.3	31.0	3.0	0	0.100
2 p.m.- 10 p.m.	32 29	3.3 3.1				649	83	732	0	0.3	56.0	4.3	0	0.050
10 p.m.- 6 a.m.	28 33	3.9 3.6	0.003	0.01	27.6	895	133	1,028	0	0.3	30.0	3.0	0	0.045
8-12-70														
6 a.m.- 2 p.m.	34.5 34.5	3.4 3.5	Composite for 8/12/70	Composite for 8/12/70	Composite for 8/12/70	687	107	792	0	0.2	42.0	2.5		0.080
2 p.m.- 10 p.m.	35.7 33.3	3.3 3.0				918	142	1,060	0	0.2	50.0	3.5	Composite	0.025
10 p.m.- 6 a.m.	35 37	3.4 3.6	0.046	0.01	37.0	553	67	620	0	0.3	37.0	1.8	0.004	0.055

Industrial Outfall Data

WP-5 - Wheeling-Pittsburgh Steel, Mingo Junction, Outfall, Ohio River, M.P. 70.83

Sample Period	Temp. °C	pH	Phenols mg/l	Cyanide mg/l	Oils mg/l	Dissolved Solids	Sup. Solids	Total Solids	Hexavalent (Cr+6)	Fluoride mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8-10-70														
6 a.m.-2 p.m.	32-34.5	6.9-6.9	0.001	0.02	11.8	293	13	306	0	0.35	1.8	1.1	0	0.005
2 p.m.-10 p.m.			0.002	0.01	9.4	287	6	293	0	0.3	2.3	1.3	0	0.005
10 p.m.-6 a.m.			Composite for 8-11-70	Composite for 8-11-70	Samples not taken because of boat being out of service.									
8-11-70														
6 a.m.-2 p.m.	33-33	6.9-6.7			25.0	272	8	280	0	0.3	2.0	0.7	0	0.045
2 p.m.-10 p.m.	33-33	7.2-6.5			Composite for 8-11-70	279	11	290	0	0.3	1.6	0.5	0	0.105
10 p.m.-6 a.m.	34.5-34	6.3-6.4	0.007	0.02	12.8	250	14	264	0	0.3	1.3	0.5	0	0.050d
8-12-70														
6 a.m.-2 p.m.	26.7-29	7.0-6.9				306	12	318	0	0.4	4.0	0.8		0.080
2 p.m.-10 p.m.	28.4-35	6.9-6.7	Composite for 8-12-70	Composite for 8-12-70	Composite for 8-12-70	346	8	354	0	0.4	3.8	0.5	Composite	0.015
10 p.m.-6 a.m.	34.4-34.4	7.1-7.1	0.020	0.03	52.2	267	5	272	0	0.3	3.4	0.5	0.002	0.005

Industrial Outfall Data

WP-7 - Wheeling-Pittsburgh Steel, Mingo Junction, Outfall, Ohio River, M. P. 71.12

Sample Period	Temp. °C	pH	Phenols mg/l	Cyanide mg/l	Oils mg/l	Dissolved Solids	Sup. Solid	Total Solids	Hexavalent (Cr+6)	Fluoride mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8-10-70														
6 a.m.- 2 p.m.	39	8.9	0.208	0.01	32.2	311	107	418	0	0.9	12.0	0.5	0	0.390
2 p.m.- 10 p.m.	39	8.5	0.008	0.01	41.4	354	78	432	0	1.0	12.2	0.6	0	0.460
10 p.m.- 6 a.m.	Samples not taken because of boat being out of service.													
8-11-70														
6 a.m.- 2 p.m.	38	8.1	0.003	0.01	27.6	298	448	746	0	1.6	21.0	0.7	0	1.400
2 p.m.- 10 p.m.	36	7.8	0.005	0.02	22.4	332	214	546	0.02	1.1	13.0	2.0	0	0.560
10 p.m.- 6 a.m.	39	7.6	0.003	0.01	31.6	302	450	752	0	1.7	42.0	0.5	0	2.250
8-12-70														
6 a.m. - 2 p. m.	40	11.1	Composite for 8-12-70	Composite for 8-12-70	Composite for 8-12-70	623	759	1,382	0.12		54.0	1.8	Composite	2.600
2 p.m.- 10 p.m.	46.7 / 37.8	10.7 / 7.6				437	481	918	0.1	8.2	44.0	1.3		2.350
10 p.m.- 6 a.m.	38.5 / 35.7	7.3 / 8.6	0.020	0.02	35.2	225	285	510	0	2.0	37.0	0.7	0.003	1.350

Industrial Outfall Data

WP-8 - Wheeling-Pittsburgh Steel, Mingo Junction, Outfall, Ohio River, M. P. 71.18

Sample Period	Temp. C	pH	Phenols mg/l	Cyanide mg/l	Oils mg/l	Dissolved Solids	Sup. Solid	Total Solids	Hexavalent (Cr+6)	Fluroide mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8-10-70														
6 a.m.- 2 p.m.	41 39	8.6 9.0	0.004	0.00	18.4	546	133	679	1.5	1.2	6.0	1.0	0	0.370
2 p.m.- 10p.m.			0.005	0.01	7.2	501	25	526	1.4	1.0	1.6	0.6	0	0.090
10 p.m.- 6 a.m.	Samples not taken because of boat being out of service.													
8-11-70														
6 a.m.- 2 p.m.	38 37	10.3 8.7		0.01		210	238	448	1.6	1.1	4.0	0.5	0	0.270
2 p.m.- 10 p.m.	41.5 39.5	8.9 9.9		Composite for 8-11-70	Composite for 8-11-70			496	1.2	1.2	1.8	0.6	0	0.090
10 p.m.- 6 a.m.	38 38	7.2 8.2	0.000	0.02	4.4			554	2.2	1.0	2.2	0.5	0	0.185
8-12-70														
6a.m - 2 p.m.	28.4 29	7.8 7.4	Composite for 8-12-70			347	31	378	0.4	0.8	12.0	0.4		0.215
2 p.m.- 10 p.m.	29 36.5	7.5 7.6		Composite for 8-12-70	Composite for 8-12-70	423	15	438	2.3	1.1	3.0	0.4		0.100
10 p.m.- 6 a.m.	36.5 35.7	7.8 7.9	0.004	0.07	17.6	556	18	574	4.3	10.2	2.6	0.5	Composite 0.004	0.070

Industrial Outfall Data

WP-9 - Wheeling-Pittsburgh Steel, Mingo Junction, Outfall, Ohio River, M. P. 71.24

Sample Period	Temp. °C	pH	Phenols mg/l	Cyanide mg/l	Oils mg/l	Dissolved Solids	Sup. Solid	Total Solids	Hexavalent (Cr+6)	Fluoride mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8-10-70														
6 a.m.- 2 p.m.	29 30	7.0 6.9	0.003	0.02	10.6	289	22	311	0	0.6	2.2	0.7	0	0.045
2 p.m.- 10 p.m.			0.000	0.01	13.0	292	24	316	0	0.3	2.0	0.6	0	0.045
10 p.m.- 6 a.m.	Samples not taken because of boat being out of service.													
8-11-70														
6 a.m. - 2 p.m.	29 33	7.0 6.7	Composite for 8-11-70	0.01	Composite for 8-11-70	221	41	262	0	0.4	2.4	0.5	Composite	0.090
2 p.m.- 10 p.m.	31 32	6.8 6.7		0.02		190	10	200	0	0.3	2.0	0.5		0.060
10 p.m.- 6 a.m.	31 32	5.5 7.0	0.000	0.01	9.2	314	10	324	0	0.3	1.9	0.5	0	0.040
8-12-70														
6 a.m.- 2 p.m.	26.7 28.4	6.9 6.7	Composite for 8-12-70	Composite for 8-12-70	Composite for 8-12-70	224	24	248	0	0.5	1.0	0.5		0.020
2 p.m.- 10 p.m.	31 33	6.8 6.6				243	7	250	0	0.4	5.0	0.5	Composite	0.010
10 p.m.- 6 a.m.	33.4 31.7	6.9 6.9	0.001	0.02	35.8	253	7	260	0	0.4	6.0	0.5	0.002	0.025

Industrial Outfall Data

WP-10 - Wheeling-Pittsburgh Steel, Yorkville, Outfall, Ohio River, M. P. 83.43

Sample Period	Temp. °C	pH	Phenols mg/l	Cyanides mg/l	Oils mg/l	Dissolved Solids	Sup. Solid	Total Solids	Hexavalent (Cr+6)	Fluoride mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8-10-70														
6 a.m.- 2 p.m.	33 34.5	5.9 6.1	0.008	0.00	26.6	831	814	1,645	0	0.4	270.0	1.8	0	0.080
2 p.m.- 10 p.m.	No samples taken because of barge blocking outfall.													
10 p.m.- 6 a.m.	No samples taken because of barge blocking outfall.													
8-11-70														
6 a.m.- 2 p.m.	Only one half of sample taken because of different sample crews and barge docking.					365	91	456			200.0	1.4	0	0.050
2 p.m.- 10 p.m.	No samples taken because of barge docking.													
10 p.m.- 6 a.m.	No samples taken because of barge docking.													
8-12-70														
6 a.m.- 2 p.m.	36.7 29	5.9 4.9	0.003	Composite for 8-12-70	967.2	879	175	1,054	0	0.3	390.0	2.5	0	0.030
2 p.m.- 10 p.m.	34.5 34	4.0 5.3	0.016	0.02	4,261.6	793	187	980	0	0.4	480.0	2.3		0.045
10 p.m.- 6 a.m.														

Industrial Outfall Data

WP-11 - Wheeling-Pittsburgh Steel, Yorkville, Outfall, Ohio River, M.P. 83.5

Sample Period	Temp. °C	pH	Phenols mg/l	Cyanide mg/l	Oils mg/l	Dissolved Solids	Sup Solid	Total Solids	Hexavalent (Cr+6)	Fluoride mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8-10-70														
6 a.m. - 2 p.m.	30.5 36.5	2.5 2.6	0.150	0.00	10.8	419	47	466	0	0.4	120.0	1.5	0	0.065
2 p.m.- 10 p.m.	33.5	2.7	0.325	0.01	16.2	846	67	913	0	0.4	68.0	1.5	0	0.140
10 p.m.- 6 a.m.	34.0	1.9	1.235	-	-	686	240	926	0	0.4	120.0	1.5	0	0.100
8-11-70														
6 a.m.- 2 p.m.				Composite 8-11-70	Composite 8-11-70	Samples not taken.								
*2 p.m.- 10 p.m.	36 36	2.3 1.3	1.625			1,372	32	1,404	0	0.3	116.0	2.0	0.002	0.100
10 p.m.- 6 a.m.	38	2.3	1.310	0.00	1.0	1,458	58	1,496	0	0.3	112.0	1.3	Composite	0.080
8-12-70														
6 a.m.- 2 p.m.	38.3 37.2	2.4 2.5	0.312	Composite 8-12-70	Composite 8-12-70	1,169	63	1,232	0	0.3	380.0	1.7	0	0.025
2 p.m.- 10 p.m.	40.5 37.2	2.5 2.1	0.754			1,488	120	1,608	0	0.3	29.0	2.7	Composite	0.025
10 p.m.- 6 a.m.	37.5 37	2.1 2.0	0.234	0.00	25.4	1,173	23	1,196	0	0.3	410.0	2.0		0.020

*Represents one single sample

Industrial Outfall Data

WP-12 - Wheeling-Pittsburgh Steel, Yorkville, Outfall, Ohio River, M. P. 83.58

Sample Period	Temp. °C	pH	Phenols mg/l	Cyanide mg/l	Oils mg/l	Dissolved Solids	Sup. Solid	Total Solids	Hexavalent (Cr+6)	Fluoride mg/l	Iron mg/l	Manganese mg/l	Arsenic mg/l	Lead mg/l
8-10-70														
6 a.m.- 2 p.m.														
2 p.m.- 10 p.m.														
10 p.m. 6 a.m.														
8-11-70														
6 a.m.- 2 p.m.			0.010	0.00	Composite for 8-11-70	3,208	338	3,546	0	0	185.0	3.0	0	0.010
2 p.m.- 10 p.m.	18 20	3.2 3.3	0.004	0.00		3,194	352	3,546	0	0	197.0	3.0	Composite	0.015
10 p.m.- 6 a.m.	19.5 19	1.9 3.2	0.001	0.00	29.8	3,649	337	3,986	0	0	187.0	3.2		0.020
8-12-70														
6 a.m.- 2 p.m.	17 19.5	3.0 2.9	Composite for 8-12-70	Composite for 8-12-70	Composite for 8-12-70	3,512	348	3,860	0	0.1	440.0	3.0	0.003	0.000
2 p.m.- 10 p.m.	20 20	2.7 2.8				3,570	318	3,888	0	0.1	480.0	3.4	Composite	0.000
10 p.m.- 6 a.m.	20.5 19.5	2.9 2.8	0.007	0.00	48.6	3,753	211	3,964	0	0.3	435.0	3.5		0.000

LIST OF BIOLOGICAL SAMPLING STATIONS*

Mile Point	Description
54.4	New Cumberland Locks and Dam
56.0	Below New Cumberland Locks and Dam
62.0	In the back-channel of the Ohio River around Brown Island
63.0	In the main channel around Brown Island, approximately 0.7 miles below National Steel
66.2	Old Lock and Dam #10, above Steubenville, Ohio
68.0	Left - 1.3 miles below Harmon Creek Right - 0.1 miles below Steubenville Sewage Treatment Plant
69.9	Left - 0.6 miles below Koppers Company Right - 1 mile below Wheeling-Pittsburgh Steel
71.9	Right - 0.4 miles below Wheeling-Pittsburgh Steel, Mingo Junction
78.0	Right - 1 mile below Ohio Power Company
83.0	0.2 miles above Wheeling-Pittsburgh Steel, Yorkville, Ohio
84.0	Right - 0.6 miles below Wheeling-Pittsburgh Steel, Yorkville, Ohio
87.4	Lock and Dam #12
93.4	Left - 2 miles below Wheeling Sewage Treatment Plant
96.1	Lock and Dam #13, 1.4 miles below Wheeling-Pittsburgh Steel, Benwood, W. Va.
129.1	Lock and Dam #15

*Phytoplankton samples were collected at the chemical sampling stations.

SALMONELLA STUDY

It is desirable to isolate and identify certain types of pathogenic bacteria from the bacteriological samples to verify the disease producing capacity of the bacteria. Salmonella bacteria, which cause gastrointestinal disorders, were selected. Suspected Salmonella colonies were isolated from the other bacteria present in the samples by growing the bacteria in an environment which stimulates the growth of only Salmonella bacteria. Such a selective environment is provided by the use of Selenite F broth or tetrathionate agar in the agar plates. In this test, only the tetrathionate agar supported any bacteria colonies suspected to be Salmonella. Samples of these colonies were sent to the Communicable Disease Center in Atlanta, Georgia for serological typing. These samples of bacteria colonies were identified as follows:

Source	Salmonella Isolated
Ohio River at Bellaire, Ohio intake	1. Salmonella enteritidis ser Typhimurium
	2. Salmonella enteritidis ser Panama
	3. Salmonella enteritidis bioser Java
	4. Salmonella enteritidis ser Panama
	5. Salmonella enteritidis bioser Java
	6. Salmonella enteritidis ser Panama
	7. Salmonella enteritidis ser Muenchen
	8. Salmonella enteritidis ser Panama
	9. Salmonella enteritidis bioser Java
	10. Salmonella enteritidis bioser Java
Ohio River below Steubenville, Ohio Sewage Treatment Plant	11. Salmonella enteritidis ser. Newport
	12. Salmonella enteritidis ser Thompson
	13. Salmonella enteritidis bioser Java
	14. Salmonella enteritidis ser Newport
	15. Salmonella enteritidis ser Thompson

BACTERIA SURVIVAL STUDY

This study was conducted to observe the bacteria survival patterns of pollution indicators and Salmonella at selected sample locations on the stretch of the Ohio River examined during this survey and to determine the effect of sewage and industrial pollution on the bacteria populations. Sewage contains nutrients for bacterial growth, and industrial wastes can have either stimulating or toxic effects on bacterial growth.

Samples were collected at two locations and filtered through a 0.22 mu membrane filter to remove all bacteria present.

Pure cultures of each of the three indicator organisms (non-fecal coliform, fecal coliform, and fecal streptococcus) as well as Salmonella were inoculated into four equal aliquots of each of the two filtered samples. They were incubated at 26.5°C (stream temperature) and counted at intervals of 1, 2, 3 7, and 14 days. The results were calculated as percent of initial concentration remaining and recorded in Table A-I of this Appendix. To understand these results it should be remembered that the non-fecal coliforms can survive with a minimum of nutrients while the fecal coliforms, fecal streptococci, and Salmonella have more specific nutritional requirements for growth. Fecal streptococci have been generally reported to die-off somewhat rapidly in water.

The results of the sample collected below the Steubenville, Ohio waste treatment plant and the sample collected at the Bellaire, Ohio

water intake are similar. Both samples showed a regrowth of the non-fecal coliform culture and the Salmonella culture. Both samples had a slight decline in the fecal coliform culture, and both had a die-off of the fecal streptococcus culture.

The results indicate adequate nutrients were present for sustenance of the bacteria with the exception of the fecal streptococcus culture. The regrowth of non-fecal coliform and Salmonella cultures suggests no toxic effects caused by industrial wastes.

OHIO RIVER STUDY
SUMMER 1970

SURVIVAL STUDY ON TORONTO, OHIO
TO McMECHEN, WEST VIRGINIA REACH

TABLE A-I

#550551 Ohio River at Bellaire, Ohio Intake (M.P. 94.0)

CULTURE	INITIAL COUNT/100 ml	PERCENT REMAINING 24 HOURS	48 HOURS	72 HOURS	7 DAYS	14 DAYS
Salmonella Java	110,000	53.6	37.3	30.0	181.9	R*
Non Fecal Coliform	92,000	260.9	R*	141.3	R*	R*
Fecal Coliform	140,000	49.3	7.0	52.1	21.2	40.4
Fecal Streptococcus	44,000	14.1	0.45	0.11	<0.22	<0.22

* Regrowth = Greater than a ten-fold increase over initial number

OHIO RIVER STUDY
SUMMER 1970

SURVIVAL STUDY ON TORONTO, OHIO
TO McMECHEN, WEST VIRGINIA REACH

TABLE A-1 (Continued)

#550376 Ohio River below Steubenville, Ohio Sewage Treatment Plant (M.P. 67.9)

CULTURE	INITIAL COUNT/100 ml	PERCENT REMAINING				
		24 HOURS	48 HOURS	72 HOURS	7 DAYS	14 DAYS
Salmonella Java	150,000	36.7	0.33	1.4	34.0	R*
Non Fecal Coliform	80,000	275.0	0.13	2.5	R*	R*
Fecal Coliform	140,000	35.7	7.0	57.9	79.3	28.6
Fecal Streptococcus	25,000	27.2	8.4	1.6	< 0.40	<0.40

*Regrowth = Greater than a ten-fold increase over initial number

TRACE METALS STUDY

Special samples were collected at nine stations on July 27 for the purpose of making trace metal analyses. These samples were shipped to the Analytical Quality Control Laboratory in Cincinnati for the analyses.

Iron values exceeded 1.0 mg/l in two samples. High levels of manganese and aluminum generally accompanied the high iron values. Zinc was observed frequently with lesser occurrences of copper, nickel, lead and chromium. Boron, barium and strontium were found in all samples, however, cadmium, arsenic, beryllium, cobalt and vanadium were not detected in any samples. Mercury exceeded 0.5 micrograms per liter in two samples.

A complete tabulation of the data is shown in Table A-II of this Appendix.

Table A-II

Trace Metal Analyses
July 27, 1970
All Results in ug/l (ppb)

Mile Point

Trace Metal	60.8	65.3	Harmon Creek	67.9	70.0	72.0	82.7	86.7	95.5
Zinc	< 20	114	120	32	110	108	66	84	300
Cadmium	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Arsenic	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Boron	68	78	1280	92	230	74	230	94	106
Phosphorus	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
Iron	370	480	2000	820	1540	920	320	750	720
Molybdenum	< 40	< 40	88	< 40	90	< 40	96	< 40	72
Manganese	124	210	940	142	350	210	230	200	216
Aluminum	< 40	40	740	< 40	152	< 40	88	50	90
Beryllium	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Copper	< 10	< 10	< 10	< 10	15	< 10	19	16	12
Silver	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Nickel	< 20	< 20	< 20	< 20	24	< 20	24	< 20	< 20
Cobalt	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Lead	< 40	< 40	74	< 40	64	< 40	60	< 40	< 40
Chromium	< 10	< 10	< 10	< 10	12	< 10	12	< 10	< 10
Vanadium	< 40	< 40	< 40	< 40	< 40	< 40	< 40	< 40	< 40
Barium	23	76	30	41	125	60	104	80	106
Strontium	25	64	30	32	166	44	192	88	148
Mercury	< 0.5	< 0.5	0.7	0.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

AQUATIC LIFE

Bottom organisms were collected during the study of July-August, 1970, using a Petersen dredge and rockfilled basket samplers. The baskets were exposed at a depth of one to two feet for four weeks. Upon retrievel, the rocks were emptied into a tub of water and each rock was brushed to remove the clinging organisms. The samples were concentrated on a sieve, preserved and taken to the laboratory for identification. The results of the bottom and basket sampling are shown in Table A-III.

During this study, one liter water samples were collected on July 27 and August 3 for phytoplankton analysis at the 12 stations designated as sampling points for chemical analyses. Upon receipt in the laboratory, each sample was divided into two portions, one being prepared and used for a Sedgwick-Rafter count and the remainder was prepared and used for a chlorophyll determination using a Bausch and Lomb Spectronic 20. The results of the suspended algal counts and the chlorophyll concentrations are shown in Tables A-IV, V and VI.

For this study, attached growths were collected on glass slides exposed at the surface for a four week period in floating samplers. Four slides from each sampler were prepared for Sedgwick-Rafter counts, and each of the remaining four slides were prepared for chlorophyll analysis. The composition of the attached growths is shown in Table A-VII and the chlorophyll values are shown in Table A-VIII.

TABLE A-III

Macroinvertebrates Collected from the Ohio River
by Dredge and Basket Samplers - July-August 1970

Individuals/Basket or Dredge

Organism	Mile Point	54.4	56.0			62.0	63.0		66.2			
	Sampler	B	D			D	D	B	D			B
	Location	R	L	M	R	R	L	L	L	M	R	R
CRAYFISH												
Cambarinae												2
Orconectes sp.		1										
FLATWORMS								4		1		
MIDGE FLIES		1	1	1				2		3		
Chironominae												
Chironomus sp.				3						9	1	
C. (Dicrotendipes) sp.						4				12		
Orthocladiinae												
Cricotopus sp.		2						2				1
Psectrocladius sp.		1				3		24	1	6	1	2
Tanypodinae												
Pentaneura sp.				1								1
AQUATIC WORMS		3	21		54	3	154	26	103	1	9	2
WATER FLEAS		X						X				X
HYDROIDS												
Hydra sp.				X		X		X		X	X	
BRYOZOA												
Plumatella sp.				X		X	X					X
Urnatella sp.												X
Number of Organisms		8	22	5	54	10	154	58	104	32	11	8
Number of Taxa		5	2	4	1	5	2	6	2	6	4	8

Key: B = Basket Sampler
D = Petersen Dredge
L = Left, M = Middle, R = Right } Location in River facing downstream
X = Present

TABLE A-III

Organism	Mile Point	68.0					69.9			
	Sampler	D			B		D			B
	Location	L	M	R	L	R	L	M	R	L
DAMSELFLIES										
Coenagrionidae										
Ischnura sp.						1				
CRAYFISH										
Cambarinae						1				
Orconectes sp.						2				
FLATWORMS									3	
ROUNDWORMS									13	
SNAILS										
Physidae										
Physa sp.									1	
MIDGE FLIES			1							
Chironominae										
Chironomus sp.					2					
C. (Dicrotendipes) sp.			1							
Orthocladiinae										
Cricotopus sp.					5					2
Psectrocladius sp.					28	2				
Tanypodinae										
Pentaneura sp.					4			1		
Procladius sp.				3						
AQUATIC WORMS		121	9	88	460	1	44	13	12	
LEECHES			1							
WATER FLEAS					X					
HYDROIDS										
Hydra sp.		X			X				X	
BRYOZOA			X		X				X	
Number of Organisms		121	12	91	499	7	44	14	29	2
Number of Taxa		2	4	2	8	4	1	2	6	1

TABLE A-III

Organism	Mile Point	71.0				78.0				83.0			
	Sampler	D			B	D			B	D			B
	Location	L	M	R	R	L	M	R	R	L	M	R	R
CADDISFLIES													
Psychomyiidae													
Cyrnellus sp.									18				13
Hydroptilidae									1				
DAMSELFLIES													
Coenagrionidae													
Argia sp.									1				
CRAYFISH													
Cambarinae													
Orconectes sp.									1				
FLATWORMS									1				
SNAILS		1											
MIDGE FLIES													
Chironominae													
Chironomus sp.		4											
C. (Dicrotendipes) sp.					3				4				6
C. (Cryptochironomus) sp.					1								2
C. (Einfeldia) sp.									4				16
C. (Endochironomus) sp.													2
Polypedilum sp.					1								8
Orthocladiinae													
Cricotopus sp.					7				16				12
Psectrocladius sp.			1		3		1		32				6
Tanypodinae													
Pentaneura sp.					5			9	12	1			5
AQUATIC WORMS		3	51	12	1	153	119	28	15	24	75	29	14
LEECHES		7	19				3		1	1			
WATER FLEAS									X				
HYDROIDS													
Hydra sp.		X	X						X		X		
Cordylophora sp.			X										
BRYOZOA		X							X				
Number of Organisms		15	71	12	21	153	123	37	106	26	75	29	84
Number of Taxa		6	5	1	7	1	3	2	15	3	2	1	10

TABLE A-III

Organism	Mile Point	84.0		87.4				93.4		
	Sampler	D	B	D			B	D		
	Location	R	R	L	M	R	L	L	M	R
CADDISFLIES										
Psychomyiidae										
Cyrnellus sp.							3			1
Hydroptilidae										
Hydroptila sp.			2							
Hydropsychidae									1	
DAMSELFLIES										
Coenagrionidae			2							
Argia sp.			2				1			
FLATWORMS				3			3			
CLAMS										
Sphaeriidae					1					
Corbiculidae										
Corbicula sp.				1						1
MIDGE FLIES										
Chironominae										
Chironomus (Dicrotendipes) sp.							10			
C. (Cryptochironomus) sp.							6			
C. (Einfeldia) sp.			102							
Polypedilum sp.							6			
Orthocladiinae										
Cricotopus sp.							16			
Psectrocladius sp.							43			
Tanypodinae										
Pentaneura sp.			16				24	6		
Procladius sp.						3				
AQUATIC WORMS		10	150	51	4		58	112		24
LEECHES							1	18		
WATER FLEAS			X	X			X			
HYDROIDS										
Hydra sp.							X			
BRYOZOA							X			
Number of Organisms		10	274	55	5	3	171	136	1	26
Number of Taxa		1	6	4	2	1	14	3	1	3

TABLE A-III

Organism	Mile Point	96.1				129.0			
	Sampler	D			B	D			B
	Location	L	M	R	L	L	M	R	R
CADDISFLIES									
Psychomyiidae									
Cyrnellus sp.									8
Hydropsychidae									
Hydropsyche sp.					2				
Potamyia sp.									3
MAYFLIES									
Baetidae									
Tricorythodes sp.									1
DAGONFLIES									
Libellulidae									
Neurocordulia sp.									2
CRAYFISH									
Cambarinae									
Orconectes sp.					1				
CLAMS									
Sphaeriidae							1	7	
Corbiculidae									
Corbicula sp.				1					
SNAILS									
Physidae									
Physa sp.									4
MIDGE FLIES							1		1
Chironominae									
Chironomus sp.								1	
C. (Dicrotendipes) sp.									1
C. (Cryptochironomus) sp.						9			2
C. (Chironomus sp.						9			
Polypedilum sp.					2				
Tanytarsus sp.									2
Orthocladiinae									
Cricotopus sp.					9				1
Psectrocladius sp.					5				
Tanypodinae									
Pentaneura sp.						85		7	3
Procladius sp.								1	
Coelotanypus sp.								1	
AQUATIC WORMS		32	6	6		1500	4	165	4
LEECHES		3	4					9	
WATER FLEAS									X
HYDROIDS							X		
BRYOZOA									X
Number of Organisms		35	10	7	19	1603	6	191	32
Number of Taxa		2	2	2	5	4	4	7	13

TABLE A-IV

Phytoplankton Grab Samples Collected from the Ohio River
on July 27, 1970
Sedgwick-Rafter Data
(Units/ml)

Organism	Sta. No.	386	550	174	209	376	368	389	390	391	147	551	552
	M. P.	60.8	65.3	*	67.1	67.9	70.0	72.0	75.0	82.7	86.7	94.0	95.9
COCCOID BLUE-GREEN													
Agmenellum sp.							57	57			57	57	57
Synechococcus sp.							57						
COCCOID GREEN													
Acanthosphaera sp.			57							57	171		
Actinastrum sp.		57		28								57	171
Ankistrodesmus sp.				28	114	171	171	342	171	627	1197	339	741
Chlorococcum sp.				28	57		114		342		171	114	285
Chodatella sp.					57		57					114	
Closteriopsis sp.					57			114		57	114	57	57
Coelastrum sp.								114		57	114	171	57
Cosmarium sp.			57										
Crucigenia sp.			57		57	114		57		114	57	114	
Dictyosphaerium sp.					57				114		114	57	57
Dimorphococcus sp.							57						
Elakatothrix sp.											57		
Francela sp.											114		
Golenkinia sp.			57				57	57	57				
Micractinium sp.		228			57	285	171	57	114		342	171	228
Oocystis sp.							114				114		
Pediastrum sp.		57	114	28			57		57	114	57		
Scenedesmus sp.		171			285	342	285	285	171	285	513	228	171
Sphaerocystis sp.			57							171			
Staurastrum sp.												57	
Tetrastrum sp.									114		114	57	228
unknown		513	228		342	285	228	171	513	570	969	456	513
GREEN FLAGELLATES													
Trachelomonas sp.				28						57			
LIVE CENTRIC DIATOMS		114	171	56	228	171	342	285	228	228	342	171	171
LIVE PENNATE DIATOMS			57	168				114	114	57	171	114	57
Total Live Algae		1140	855	364	1311	1368	1767	1653	2052	2394	4788	2394	2793

*Harmon Creek

TABLE A-V

Phytoplankton Grab Samples Collected from the Ohio River
on August 3, 1970
Sedgwick-Rafter Data
(Units/ml)

Organism	Sta. No.	386	550	174	309	376	388	389	555	391	147	551	552
	M. P.	60.8	65.3	*	67.1	67.9	70.0	72.0	75.6	82.7	86.7	94.0	95.5
COCCOID BLUE-GREEN													
Anacystis sp.												57	
Raphidiopsis sp.			228	57	114	114				171			
COCCOID GREEN													
Ankistrodesmus sp.		57	228				684	114	627		114	114	57
Chlorococcum sp.		342			114			114	57		228		57
Chodatella sp.					57								
Closteriopsis sp.		57	57		114		171	57		114			
Coelastrum sp.									114	57	57		
Crucigenia sp.								57					
Dictyosphaerium sp.								57			171		
Golenkinia sp.		57	57		57	171	57						
Micractinium sp.		114	228		114	399	399	57	342	171	228	228	285
Oocystis sp.		114									114		
Pediastrum sp.							57					57	
Scenedesmus sp.		228	285	57	285	456	171	228	570	171	171	342	285
Sphaerocystis sp.								57					
Tetrastrum sp.			57		57	57	114		285	57	57	114	
Treubaria sp.			57				57			171			114
Unknown		57	228		285	285	285	456	342	342	171	285	399
GREEN FLAGELLATES													
Trachelomonas sp.		57					57	57					
LIVE CENTRIC DIATOMS		114	171		57		57	171	57	399	342	399	171
LIVE PENNATE DIATOMS		114		171	57				171	57	171	57	
Total Live Algae		1311	1596	285	1311	1482	2109	1425	2565	1710	1824	1653	1368

*Harmon Creek

TABLE VI

Phytoplankton Chlorophyll from the Ohio River
July-August 1970

Station Number	Mile Point	Total Chlorophyll (µg/l)	
		7-27	8-3
386	60.8	15.20	14.89
550	65.3	15.48	13.13
174*		14.40	15.31
209	67.1	12.67	13.73
376	67.9	15.20	17.23
388	70.0	21.79	14.75
389	72.0	15.20	16.27
390	75.0	28.00	
555	75.6		16.41
391	82.7	21.35	16.00
147	86.7	31.53	18.07
551	94.0	20.02	27.03
552	95.5	23.03	23.39

*Harmon Creek

TABLE VII

Periphyton Samples Collected from the Ohio River during August 1970

Sedgwick-Rafter Data

(Cells/mm^2)

Organism	Inclusive Dates	* 8/5	7/8-8/5	7/8-8/5	7/9-8/7	7/9-8/7	7/9-8/7	7/9-8/5	7/9-8/6	7/9-8/6	7/10-8/6	7/10-8/5
	Location	R	L	R	L	R	R	R	R	R	L	R
	M. P.	54.4	63.0	68.0	69.9	69.9	71.9	78.0	83.0	84.0	96.1	129.1
COCCOID BLUE-GREEN												
Anacystis sp.												6
Raphidiopsis sp.			8		81		8	10	23	4		13
FILAMENTOUS BLUE-GREEN												
Anabaena sp.			149	215	243	97	267	329	68	158	88	124
Arthrospira sp.					16							
Lyngbya sp.								64				
Oscillatoria sp.		43	79	979	745	575	1036		113	57	16	24
COCCOID GREEN												
Actinastrum sp.				55						25		
Ankistrodesmus sp.				33	81	49	32	19				
Closteriopsis sp.												2
Closterium sp.			9					6		4		3
Coelastrum sp.										182		24
Cosmarium sp.								6	5	4		
Crucigenia sp.				45								
Dictyosphaerium sp.							32			41		
Dimorphococcus sp.				760								
Micractinium sp.					162		32					
Pediastrum sp.												11
Scenedesmus sp.			16	128	129	97	161	73	108	126	84	45
Schroederia sp.						32						
Tetrastrum sp.				45	64	32	32	13		16		
Unknown					162							
FILAMENTOUS GREEN												
Microspora sp.		18	700	400	1262	721	923			114	420	94
Spirogyra sp.					32	97	24		14		21	
Ulothrix sp.						41						
Unknown			116	45				160	315			128
GREEN FLAGELLATES												
Chlamydomonas sp.								3				3
Lepocinclis sp.							8					
Trachelomonas sp.					16			16				
PROTOZOA												
Vorticella sp.								3				
LIVE CENTRIC DIATOMS				704	32	113	146	16	23	110	21	32
LIVE PENNATE DIATOMS		43	417	600	227	284	524	373	1915	102	206	657
Total Live Algae		104	1436	4207	3252	2138	3025	1091	2584	943	856	1146

*Material scraped from lock wall

TABLE A-VIII
Periphyton Chlorophyll from the Ohio River
July-August 1970

Mile Point	Location	Inclusive Dates	Number of Replicates	Total Chlorophyll* (mg/M^2)
54.4	Right	8-5**	2	7.99
63.0	Left	7-8 to 8-5	4	32.59
68.0	Right	7-8 to 8-5	1	69.17
69.9	Left	7-9 to 8-7	4	38.01
69.9	Right	7-9 to 8-7	4	39.44
71.9	Right	7-9 to 8-7	4	36.56
78.0	Right	7-9 to 8-5	4	37.61
83.0	Right	7-9 to 8-6	4	26.11
84.0	Right	7-9 to 8-6	4	15.80
96.1	Left	7-10 to 8-6	4	22.24
129.1	Right	7-10 to 8-6	3	27.33

* Average for station
** Material scraped from lock wall